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EXAMINER
LU, ZHIYU

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/817,094	GAIKWAD ET AL.	
	Examiner	Art Unit	
	ZHIYU LU	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 07/21/2008 have been fully considered but they are not persuasive.

Regarding claims 1, 3-4 and 10-13, applicants argued that Kim281 does not describer "adjusting the operation of the receiver portion based upon the first signal power measurement and the second signal power measurement"; the RSSI adjust signal of Kim281 is produced based on a comparison of a single RSSI value 91 and a desired, but not measured, zero input RSSI value; and no description of "configuring the transmitter portion in a second transmitter configuration and the receiver portion in a second receiver configuration, wherein the first transmitter configuration is different than the second transmitter configuration and the first receiver configuration is different than the second receiver configuration".

However, the Examiner does not agree. In paragraph 0040 of Kim281, though Kim281 discloses "a desired zero input RSSI value", it does not necessarily means that the desired zero input RSSI value is not measured. Kim281 further discloses in paragraph 0040 that measured RSSI values are used to update a RSSI/power level table stored in the radio, e.g. Figs. 4-9. In paragraph 0045, Kim281 clearly discloses that the zero input RSSI value is measured during zero input calibration test. So, obviously, both RSSI values used in adjustment of Kim281 are measured during calibration test, which indeed describes the argued limitation. As for the argument on different configurations on transmitter and receiver, Fig. 3 shows a loop back calibration where both transmitter and receiver received measured RSSI values (paragraphs 0039-0040, where 64 and 76 are receiver processing module and transmitter processing module).

During calibration, e.g. Figs. 4-9, transmitter is configured with different transmission powers; and receiver is adjusted as well to account for differing power levels of received signals (paragraph 0008). So, Kim281 does the argued limitation.

Thus, the rejections are proper and maintained.

2. Applicant's arguments with respect to claims 15 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 23, applicants claim "a radio frequency communication system **comprising**: transmitter circuitry...; switch circuitry; receiver circuitry...; the radio frequency communication system…" "The radio frequency communication system" is not part of "a radio frequency communication system", which makes the apparatus indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-4 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US2004/0064281).

Regarding claim 1, Kim teaches a method of operating a radio frequency communication system having a receiver portion and a transmitter portion, the method comprising:

arranging the transmitter portion in a first transmitter configuration and the receiver portion in a first receiver configuration (Figs. 4-9, where input power of transmitter is scaled from Pmin to Pmax, and Fig. 3 concurrently RSSI module of receiver is being adjusted, paragraphs 0008, 0040);

taking a first signal power measurement (RSSI 91 of Fig. 3, paragraph 0039);

configuring the transmitter portion in a second transmitter configuration and the receiver portion in a second receiver configuration, wherein the first transmitter configuration is different than the second transmitter configuration and the first receiver configuration is different than the second receiver configuration (Figs. 4-9, where obviously input power of transmitter can be scaled from Pmin to Pmax to ensure accuracy, and Fig. 3 concurrently RSSI module of receiver is being adjusted to accommodate varying RSSI results, paragraphs 0008, 0039-0040);

performing a second signal power measurement (RSSI 91 of Fig. 3, paragraph 0039); and

adjusting the operation of the receiver portion based upon the first signal power measurement and the second signal power measurement (Figs. 4-8, where the adjustment is based on at least two RSSI measurements, measured RSSI and zero input RSSI, e.g. Fig. 4, where zero input RSSI is measured during calibration test, paragraph 0045), wherein the adjusting comprises modifying at least one threshold related to processing of receive signal strength indicator data used in the operation of the radio frequency communication system (obviously as RSSI module being corrected, maximum RSSI and minimum RSSI considered as thresholds are modified in RSSI/power level table).

Thus, based on the disclosure and figures explained above, one of ordinary skill in the art would have been obvious to recognize that Kim does disclose a method of using two RSSI measurements for the purpose of calibrating receiver.

Regarding claim 3, Kim teaches the limitation of claim 1.

Kim teaches the radio frequency communication system communicates digital information (paragraph 0028).

Regarding claim 4, Kim teaches the limitations of claims 1 and 15.

Kim et al. teaches the receiver portion and the transmitter portion are located within the same integrated circuit (paragraph 0034).

Regarding claim 10, Kim teaches the limitation of claim 1.

Kim teaches wherein the arranging provides a relatively lower level of radio frequency signal to the receiver portion (Pmin of Fig. 4).

Regarding claim 11, Kim teaches the limitation of claim 10.

Kim teaches wherein the relatively lower level of radio frequency signal corresponds to a signal power of less than approximately -90 dBm (Fig. 6, paragraph 0044).

Regarding claim 12, Kim teaches the limitation of claim 1.

Kim teaches wherein the configuring provides a relatively higher level of radio frequency signal to the receiver portion (Pmax of Fig. 4).

Regarding claim 13, Kim teaches the limitation of claim 12.

Kim teaches wherein the relatively higher level of radio frequency signal corresponds to a signal power of greater than approximately -30dBm (Fig. 6, paragraph 0044).

5. Claims 2 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US2004/0064281) in view of Bednekoff et al. (US Patent#6603810).

Regarding claim 2, Kim teaches the limitation of claim 1.

But, Kim does not expressly disclose the arranging, taking, configuring, performing, and adjusting occur on a periodic basis.

Bednekoff et al. teach the arranging, taking, configuring, performing, and adjusting occur on a periodic basis (column 7 lines 25-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having periodic calibration taught by Bednekoff et al. into the method of Kim, in order to ensure consistent reception.

Regarding claim 6, Kim teaches the limitation of claim 1.

But, Kim does not expressly disclose the adjusting further comprises modifying the value of a receive signal strength indicator using an affine function.

Bednekoff et al. teach a receiver calibrating method that adjusts RSSI value using RSSI correction factors according a look-up table, where mathematical affine relation involved therein (column 7 lines 9-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using adjusting RSSI value with affine function taught by Bednekoff et al. into the method of Kim, in order to provide appropriate RSSI adjustment to the receiver.

Regarding claim 7, Kim and Bednekoff et al. teach the limitation of claim 6.

Kim and Bednekoff et al. teach wherein the affine function is implemented using a look-up table (column 7 lines 9-60 of Bednekoff et al.).

6. Claim 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US2004/0064281) in view of Johnson (US Patent#6704352).

Regarding claim 5, Kim teaches the limitation of claim 1.

But, Kim does not expressly disclose wherein the adjusting further comprises calibrating at least one of a slope and a fixed offset of a receive signal strength indicator.

Johnson teaches a receiver calibrating method that comprises calibrating at least one of a slope and a fixed offset of a receive signal strength indicator (column 1 lines 37-62, column 3 line 23 to column 4 line 27, column 10 lines 12-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate details of calibrating receiver gain taught by Johnson into the method and system of Kim, in order to provide appropriate adjustment to RSSI over time.

Regarding claim 9, Kim teaches the limitation of claim 1.

But, Kim does not expressly disclose wherein the adjusting further comprises modifying at least one of a receive signal strength indicator slope and a receive signal strength indicator fixed offset in an analog receive signal strength indicator circuit.

However, Kim discloses analog domain operation (paragraph 0028).

Johnson teaches a receiver calibrating method that comprises calibrating at least one of the slope and the fixed offset of a receive signal strength indicator (column 1 lines 37-62, column 3 line 23 to column 4 line 27, column 10 lines 12-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate details of calibrating receiver gain taught by Johnson into the method and system of Kim, in order to provide appropriate adjustment to RSSI over time.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US2004/0064281) in view of Csapo et al. (US Patent#6801788).

Regarding claim 14, Kim teaches the method of claim 1.

But, Kim does not expressly disclose further comprising adjusting the operation of the transmitter portion based upon the first signal power measurement and the second signal power measurement.

Csapo et al. teach adjusting the operation of the transmitter portion based upon receiver signal strength settings (column 10 lines 29-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using resulted receiver signal strength settings to calibrate transmitter taught by Csapo et al. into the method of Kim, in order to provide available data for transmitter calibration.

8. Claims 15-18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US2005/0095993).

Regarding claim 15, Kim et al. anticipate a radio frequency communication system comprising:

transmitter circuitry for generating a radio frequency signal, the output of the transmitter circuitry coupled to a least one antenna (Fig. 2);

switching circuitry (73 of Fig. 2) having an input coupled to the at least one antenna (86 of Fig. 2), an output, and at least a first mode and a second mode of operation, the first mode of the switching circuitry passing a signal from the input to the output with a relatively lower level of attenuation, and the second mode of the switching circuitry passing a signal from the input to the output with a relatively higher level of attenuation (paragraphs 0012-0013, Fig. 6);

receiver circuitry for accepting a radio frequency signal, the receiver circuitry producing at least a receive signal strength indicator (114 of Fig. 6, paragraph 0041); and

the radio frequency communication system adjusting at least one characteristic of the receive signal strength indicator based on two signal power measurements (122 of Fig. 6) using the switching circuitry and the transmitter circuitry (Fig. 6, paragraphs 0040-0043).
Thus, it would have been obvious to one of ordinary skill in the art to recognize that high powered signal strength threshold is based on the determined attenuation of the transmit/receive switch, where leads to which RSSI (attenuation enabled or attenuation disabled, different characteristics) being considered as appropriate for operation (paragraph 0044-0045).

Regarding claim 16, Kim et al. teach the limitation of claim 15.
Kim et al. anticipate the arranging, taking, configuring, performing, and adjusting occur on a periodic basis (paragraph 0043).

Regarding claim 17, Kim et al. teach the limitation of claim 15.

Kim et al. anticipate the radio frequency communication system communicates digital information (paragraph 0027).

Regarding claim 18, Kim et al. teach the limitation of claim 15.

Kim et al. anticipate the receiver portion and the transmitter portion are located within the same integrated circuit (paragraph 0012).

Regarding claim 22, Kim et al. teach the limitation of claim 15.

Kim et al. anticipate wherein the adjusting comprises modifying at least one threshold related to the processing of receive signal strength indicator data used in the operation of the radio frequency communication system (paragraph 0044).

9. Claims 15-18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US2005/0095993) in view of Kim (US2004/0064281).

Regarding claim 15, Kim et al. anticipate a radio frequency communication system comprising:

transmitter circuitry for generating a radio frequency signal, the output of the transmitter circuitry coupled to a least one antenna (Fig. 2);

switching circuitry (73 of Fig. 2) having an input coupled to the at least one antenna (86 of Fig. 2), an output, and at least a first mode and a second mode of operation, the first mode of the switching circuitry passing a signal from the input to the output with a relatively lower level

of attenuation, and the second mode of the switching circuitry passing a signal from the input to the output with a relatively higher level of attenuation (paragraphs 0012-0013, Fig. 6);

receiver circuitry for accepting a radio frequency signal, the receiver circuitry producing at least a receive signal strength indicator (114 of Fig. 6, paragraph 0041); and

the radio frequency communication system adjusting at least one characteristic based on two signal power measurements (122 of Fig. 6) using the switching circuitry and the transmitter circuitry (Fig. 6, paragraphs 0040-0043).

But, Kim et al. do not expressly disclose adjusting at least one characteristic of the receive signal strength indicator.

Kim teach adjusting at least one characteristic of the receive signal strength indicator based on two power measurements using the switching circuitry and the transmitter circuitry (loop back calibration) as explained in response to claim 1 above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having a RSSI calibration based on two signal power measurements taught by Kim into the system of Kim et al., in order to provide calibration for received signal strength indication.

Regarding rejections on claims 16-18 and 22, the same apply as the rejection of claim 15 being under Kim et al. above

10. Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US2004/0063412).

Regarding claim 15, Kim et al. teaches a radio frequency communication system comprising:

transmitter circuitry for generating a radio frequency signal, the output of the transmitter circuitry coupled to a least one antenna (Fig. 2);

switching circuitry (73 of Fig. 2) having an input coupled to the at least one antenna (86 of Fig. 2), an output, and at least a first mode and a second mode of operation, the first mode of the switching circuitry passing a signal from the input to the output with a relatively lower level of attenuation, and the second mode of the switching circuitry passing a signal from the input to the output with a relatively higher level of attenuation (Figs. 4-5);

receiver circuitry for accepting a radio frequency signal, the receiver circuitry producing at least a receive signal strength indicator (87 of Fig. 3); and

the radio frequency communication system adjusting at least one characteristic of the receive signal strength indicator using the switching circuitry and the transmitter circuitry (Figs. 3-6, where the attenuation changes are obviously considered as configuration changes in transmitter path, and attenuation changes in switching circuitry and transmitter circuitry changes RSSI).

But, Kim et al. do not expressly disclose adjusting based on two signal power measurements. Kim teach adjusting at least one characteristic of the receive signal strength indicator based on two power measurements using the switching circuitry and the transmitter circuitry (loop back calibration) as explained in response to claim 1 above, which would have been obvious to one of

ordinary skill in the art to recognize as direct RSSI calibration besides attenuation calibration of Kim et al..

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having a RSSI calibration based on two signal power measurements taught by Kim into the system of Kim et al., in order to provide calibration for received signal strength indication.

Regarding claim 23, Kim et al. teach a radio frequency communication system comprising:

transmitter circuitry configured to be arranged in first and second configurations, wherein the first configuration is different than the second configuration (Figs. 4-5, where the attenuation changes are obviously considered as configuration changes in transmitter path);

switching circuitry (73 of Fig. 3); and

receiver circuitry for accepting a radio frequency signal from the switching circuitry, the receiver circuitry producing at least a receive signal strength indicator (87 of Fig. 3);

the radio frequency communication system adjusting at least one characteristic of the receive signal strength indicator using the switching circuitry and the transmitter circuitry (Figs. 3-6, where attenuation changes in switching circuitry and transmitter circuitry changes RSSI). But, Kim et al. do not expressly disclose adjusting based on two signal power measurements. Kim teach adjusting at least one characteristic of the receive signal strength indicator based on two power measurements using the switching circuitry and the transmitter circuitry (loop back calibration) as explained in response to claim 1 above, which would have been obvious to one of

ordinary skill in the art to recognize as direct RSSI calibration besides attenuation calibration of Kim et al..

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having a RSSI calibration based on two signal power measurements taught by Kim into the system of Kim et al., in order to provide calibration for received signal strength indication.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US2004/0063412) in view of Johnson (US Patent#6704352).

Regarding claim 19, Kim et al. teach the limitation of claim 15.

But, Kim et al. do not expressly disclose wherein the adjusting further comprises calibrating at least one of a slope and a fixed offset of a receive signal strength indicator.

Johnson teaches a receiver calibrating method that comprises calibrating at least one of a slope and a fixed offset of a receive signal strength indicator (column 1 lines 37-62, column 3 line 23 to column 4 line 27, column 10 lines 12-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate details of calibrating receiver gain taught by Johnson into the method and system of Kim et al., in order to provide appropriate adjustment to RSSI over time.

12. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US2004/0063412) in view of Bednekoff et al. (US Patent#6603810).

Regarding claim 20, Kim et al. teach the limitation of claim 15.

But, Kim et al. do not expressly disclose the adjusting further comprises modifying the value of a receive signal strength indicator using an affine function.

Bednekoff et al. teach a receiver calibrating method that adjusts RSSI value using RSSI correction factors according a look-up table, where mathematical affine relation involved therein (column 7 lines 9-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using adjusting RSSI value with affine function taught by Bednekoff et al., in order to provide appropriate RSSI adjustment to the receiver.

Regarding claim 21, Kim et al. and Bednekoff et al. teach the limitation of claim 20.

Kim et al. and Bednekoff et al. teach wherein the affine function is implemented using a look-up table (column 7 lines 9-60 of Bednekoff et al.).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZHIYU LU whose telephone number is (571)272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zhiyu Lu/
Examiner, Art Unit 2618

/Z. L./
Examiner, Art Unit 2618
November 5, 2008

/Duc Nguyen/
Supervisory Patent Examiner, Art Unit 2618